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10/595,186	03/21/2006	Knut Schumacher	58948US002	4226
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EXAMINER				
PINKNEY, DAWAYNE				
ART UNIT		PAPER NUMBER		
2873				
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**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

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# Office Action Summary

**Application No.**

10/595,186

**Applicant(s)**

SCHUMACHER ET AL.

**Examiner**

DAWAYNE A. PINKNEY

**Art Unit**

2873

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 16 January 2008.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-21 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-21 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SF/US)  
Paper No(s)/Mail Date 01/16/2008
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_

## DETAILED ACTION

### *Information Disclosure Statement*

1. The information disclosure statement (IDS) submitted on 01/16/2008 has been considered by the examiner.

### *Claim Rejections - 35 USC § 103*

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bechinger et al. (US 6, 369, 934) in view of Tench et al. (US 2004/0061919).

Regarding **claim 1**, Bechinger discloses, electrochemical display device capable of irreversibly switching from a first indicating state to a second indicating state, said device comprising:

a substrate (12) (Column 5, lines 32-35, and 26 of Fig. 2) having an electrically insulating surface (16) (30 of Fig. 2),

a first electrode (30) located on at least a part of said surface (16) of said substrate (12) (12 of Fig. 2),

wherein said substrate (12), at least within said part of its surface (16) is light-transmissive (24 of Fig. 2), the transmissivity of the combination of said substrate (12) and said first electrode (30) being less than that of said part of said substrate (12) (30 of Fig. 2; note that

30 of Fig. 2 is less transmissive than 24 of Fig. 2 because of 26 of Fig. 2 does not allow all of the light to be transmitted through, therefore, 30 is less transmissive than 24),

a second electrode (32) (14 of Fig. 2), and

an electrolytic liquid (28) arranged between and in electrical contact with said first and second electrodes (30, 32) (22 of Fig. 2),

wherein, upon application of an electrical voltage to said first and second electrodes (30,32) the display switches from the first indicating state to the second indicating state (Column 5, lines 66-67, Column 6, lines 1-6, and Column 8, lines 7-18).

Bechinger does not disclose upon application of an electrical voltage to said first and second electrodes (30,32), material of said first electrode (30) dissolves into said electrolytic liquid (28) exposing at least partially said substrate (12) thereby switching from the first indicating state to the second indicating state.

Tench teaches, from the same field of endeavor, that it would be desirable for the application of an electrical voltage to said first and second electrodes (30, 32), material of said first electrode (30) dissolves into said electrolytic liquid (28) exposing at least partially said substrate (12) thereby switching from the first indicating state to the second indicating state (Paragraph 0006, lines 1-19, Paragraph 0028, lines 1-15, and Claim 13) for the purpose of providing an electrochemical display device that uniformly switches as at a fast rate (Paragraph 0008, lines 16-19).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to make the application of an electrical voltage to said first and second electrodes (30,32), material of said first electrode (30) dissolves into said electrolytic liquid (28)

exposing at least partially said substrate (12) thereby switching from the first indicating state to the second indicating state as taught by the electrochemical display device of Tench in the electrochemical display device of Bechinger since Tench teaches it is known to use this feature in an electrochemical display device for providing an electrochemical display device that uniformly switches as at a fast rate (Paragraph 0008, lines 16-19).

Regarding **claim 2**, Bechinger discloses, a first electrode (30) (12 of Fig. 2) being in electrical contact with a second electrode (32) (14 of Fig. 2) through the electrolytic liquid (28) (Column 7, lines 32-40, Column 8, lines 7-28, and Fig. 2).

Although, the cited combination of Bechinger in view of Tench does not teach the electrochemical display device comprises several first electrodes (30) or several second electrodes (32), it would have been obvious to one of ordinary skill in the art at the time the invention was made to make the first electrode or the second electrode comprise several electrodes because this is a feature that is known in the art. The several electrodes can be obtained by taking the single electrode as disclosed by Bechinger, and breaking this electrode into several smaller electrodes (duplication of parts), this is known to one of ordinary skill in the art, and it would allow the display device to have a more uniform electric field applied across it.

Regarding **claim 3**, Bechinger discloses, electrochemical display device according to claim 1, further comprising at least one porous element (54) soaked with the electrolytic liquid (28) and arranged between said first and second electrodes (30,32) (Column 5, lines 59-63, and 18 of Fig. 2).

Regarding **claim 4**, Bechinger discloses, electrochemical display device according to claim 3, wherein the porous element (54) comprises a nonwoven layer (Column 5, lines 59-63, and 18 of Fig. 2).

Regarding **claim 5**, Bechinger discloses, electrochemical display device according to claim 1, wherein said substrate (12) comprises at least one electrically-conductive lead connected to said first electrode (30) (Column 8, lines 7-18, and 44, 48 of Fig. 2).

Regarding **claim 6**, Bechinger discloses, electrochemical display device according to claim 1, wherein said first electrode (30) comprises a metal layer (18) coated onto said substrate (12) (Column 5, lines 36-55, and 12 of Fig. 2).

Regarding **claim 7**, Bechinger discloses, electrochemical display device according to claim 1, wherein said second electrode (32) is located on a further substrate (20) (14 of Fig. 2).

Regarding **claim 8**, Bechinger discloses, electrochemical display device according to claim 1, wherein at least one of the substrates (12,20) comprises at least one electrically conductive lead (42,44) and connected to the respective electrode (32) (Column 8, lines 7-18, and 46, 50 of Fig. 2).

Regarding **claim 9**, Bechinger discloses, electrochemical display device according to claim 8, wherein at least one of the electrodes (30,32) comprises a metal layer (18) coated onto said respective substrate (12,20) (Column 5, lines 36-55, and 14 of Fig. 2).

Regarding **claim 10**, Bechinger discloses, electrochemical display device according to claim 9, wherein at least one of the substrates (12, 20) comprises at least one recess (26) filled with the electrolytic liquid (28) and having side and bottom walls on at least one of which the respective electrode (32) is arranged (Column 5, lines 36-39, Column 7, lines 21-34, and Fig. 2).

Regarding **claim 11**, Bechinger discloses, electrochemical display device according to claim 1, wherein said substrate (12), or said further substrate (20) if provided, comprises a synthetic film material (Column 5, lines 19-20, Column 5, lines 31-35, and 26, 28 of Fig. 2).

Regarding **claim 12**, Bechinger discloses, electrochemical display device according to claim 1, wherein said electrolytic liquid (28) is at least partially surrounded by an evaporation barrier (Column 5, lines 23-28, and Column 7, lines 19-34).

Regarding **claim 13**, although Bechinger in view of Tench does not disclose that the electrolytic liquid is colored, it would have been obvious to one of ordinary skill in the art at the time the invention was made to color the electrolytic liquid because this would allow the electrochemical display device to display a desired color regardless of whether or not the electrochemical display device is off or on.

Regarding **claim 14**, Bechinger discloses, electrochemical display device according to claim 1, comprising:

an electrically insulating first substrate layer (12) (Column 5, lines 32-35, and 26 of Fig. 2) forming said substrate and metallized for providing said first electrode (30) (Column 5, lines 36-55, and 12 of Fig. 2),

an electrically insulating second substrate layer (20) (Column 5, lines 32-35, and 28 of Fig. 2) metallized for providing said second electrode (32) (Column 5, lines 36-55, and 14 of Fig. 2),

a porous pad (54) (Column 5, lines 59-63, and 18 of Fig. 2) soaked with said electrolytic liquid (28) (22 of Fig. 2) and located between said substrate layers (12, 20) (Column 5, lines 59-63, and 18 of Fig. 2), and

an electrically non-conductive seal (56) arranged around said porous pad (54) (Column 5, lines 23-28, Column 7, lines 19-34, and 13 of Fig. 2),

wherein said substrate layers (12, 20) are spaced and electrically isolated from each other by said non-conductive seal (56) (Column 5, lines 23-28, Column 7, lines 19-34, and 13 of Fig. 2).

Regarding **claim 15**, Bechinger discloses, electrochemical display device according to claim 14, wherein said second substrate layer (20) comprises an electrically conductive path (44) insulated from said second electrode (32) and in electrical contact with said first electrode (30) of said first substrate layer (12) (Column 8, lines 7-29, and 44, 46, 48, and 50 of Fig. 2).

Regarding **claims 16-17**, Bechinger discloses, a first electrode (30) (12 of Fig. 2) being in electrical contact with a second electrode (32) (14 of Fig. 2) through the electrolytic liquid (28) (Column 7, lines 32-40, Column 8, lines 7-28, and Fig. 2), a porous pad (54) soaked with electrolytic liquid (26) (Column 5, lines 59-63, and 18 of Fig. 2) that is surrounded by a seal (56) (Column 5, lines 23-28, Column 7, lines 19-34, and Fig. 2), and the substrate layer covers the arrangement of the porous pad (Column 5, lines 23-35, and Fig. 2).

Bechinger in view of Tench discloses the claimed invention except for the first substrate and the second substrate layers are provided with several electrodes and several porous pads. It would have been obvious to one of ordinary skill in the art at the time the invention was made to make provide several electrodes and porous pads on the first substrate and the second substrate layers, since it has been held that mere duplication of the essential working parts of a device involves only routine skill in the art. *St. Regis Paper Co. v. Bemis Co.*, 193 USPQ 8.



Regarding **claim 18**, Bechinger discloses, electrochemical display device according to claim 1, wherein said seal (56) comprises bonding material such as adhesive material or heat seal material (Column 5, lines 23-28, Column 7, lines 19-34, and 13 of Fig. 2).

4. Claim 19 is rejected under 35 U.S.C. 103(a) as being unpatentable over Bechinger et al. (US 6, 369, 934) in view of Tench et al. (US 2004/006919) as applied to claim 1 above, in view of Agrawal et al. (US 6, 795, 226).

Bechinger in view of Tench remains as applied to **claim 1 above**.

Bechinger in view of Tench does not teach the substrate (12) comprises at least two parallel first channels (82) being open to one side of the substrate (12), each of said first channels (82) having a surface provided with a first electrode (30) extending along said first channel (82), a second substrate (20) comprises at least two parallel second channels (84) being open to one side of the second substrate (20) facing said first substrate (12), each of said second channels (48) having a surface provided with a second electrode (32) extending along said second channel (84), wherein said substrates (12,20) are arranged such that the first and second channels (82,84) are facing and crossing each other, wherein said first and second channels (82,84) are filled with the electrolytic liquid (28), and wherein, upon application of said voltage to one of said first electrodes (20) and one of said second electrodes (32), material of said one first electrode (30) dissolves into said electrolytic liquid (28) in the region in which the first associated channel (82) crosses the associated second channel (84).

Agrawal teaches, from the same field of endeavor, an electrochemical device, wherein the substrate (12) comprises at least two parallel first channels (82) being open to one side of the

substrate (12) (Column 12, lines 11-23, and 47, 48 of Fig. 3B), each of said first channels (82) having a surface provided with a first electrode (30) extending along said first channel (82) (Column 12, lines 11-23, and 32, 34 of Fig. 3B), a second substrate (20) comprises at least two parallel second channels (84) being open to one side of the second substrate (20) facing said first substrate (12) (Fig. 3B), each of said second channels (48) having a surface provided with a second electrode (32) extending along said second channel (84) (29 of Fig. 3B), wherein said substrates (12,20) are arranged such that the first and second channels (82,84) are facing and crossing each other, wherein said first and second channels (82,84) are filled with the electrolytic liquid (28), and wherein, upon application of said voltage to one of said first electrodes (20) and one of said second electrodes (32), material of said one first electrode (30) dissolves into said electrolytic liquid (28) in the region in which the first associated channel (82) crosses the associated second channel (84) (Column 2, lines 34-45, and Column 12, lines 11-23) for the purpose of this allows the display device to change states faster (Column 12, lines 16-17).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to include the device structure as taught by the electrochemical device of Agrawal in the combination of Bechinger in view of Tench since Agrawal teaches it is known to use these features in an electrochemical device for allowing the display device to change states faster (Column 12, lines 16-17).

5. Claims 20-21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bechinger et al. (US 6, 369, 934) in view of Tench et al. (US 2004/0061919) as applied to claim 1 above, in view of Morita (US 4, 253, 742).

Bechinger in view of Tench remains as applied to **claim 1 above**.

Bechinger in view of Tench does not teach an electrochemical display device in which the distance between a first electrode (30) and a second electrode (32) varies, and at least one of the facing electrode surfaces (30, 32) is arcuate.

Morita teaches, that in a electrochemical display device having a substrate, first and second electrodes, an electrolytic liquid which switches between states with the application of a voltage that it would be desirable to for the distance between a first electrode (30) and a second electrode (32) varies (12' and 16 of Fig. 2), and at least one of the facing electrode surfaces (30,32) is arcuate (16 of Fig. 2) for the purpose of this provides enhanced contrast (Column 4, lines 42-43).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to use the electrochemical display device configuration as taught by the electrochemical display device of Morita with the combination of Bechinger in view of Tench since Morita teaches it is well known to use these features for providing enhanced contrast (Column 4, lines 42-43).

#### ***Response to Arguments***

6. Applicant's arguments with respect to claims 1-21 have been considered but are moot in view of the new ground(s) of rejection.

#### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to DAWAYNE A. PINKNEY whose telephone number is (571)270-1305. The examiner can normally be reached on Monday-Thurs. 8 a.m.- 4:30 p.m..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ricky Mack can be reached on (571) 272-2333. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Scott J. Sugarman/  
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Examiner, Art Unit 2873  
04/09/2008